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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,967	02/14/2002	Jennifer Y. Sun	005120 USA/ETCH/IBSS	9245

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APPLIED MATERIALS, INC.  
2881 SCOTT BLVD. M/S 2061  
SANTA CLARA, CA 95050

EXAMINER

MOORE, KARLA A

8

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 10/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/075,967

Applicant(s)

SUN ET AL.

Examiner

Karla Moore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-18 is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 2001/0003271 A1 to Otsuki in view of U.S. Patent No. 6,170,429 to Schoepp et al and U.S. Patent No. 5,488,925 to Kumuda.

3. Otsuki discloses the invention substantially as claimed and comprising: a process chamber component used in the production of semiconductor devices comprising: at least one internal component (upper chamber 11a and lower chamber 11b) including an aluminum surface (paragraph 43); and a spray coated yttrium oxide coating overlying the aluminum surface (paragraph 43).

4. However, Otsuki fails to teach the internal component comprising an anodized aluminum surface.

5. Schoepp et al. teach the use of an aluminum chamber component with an anodized aluminum layer for the purpose of protecting the aluminum from substantial attack by plasma chemistry (column 7, rows 16-25).

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6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an aluminum component in Otsuki with an anodized layer in order to prevent substantial attack by plasma chemistry as taught by Schoepp et al.

7. Otsuki and Schoepp et al. further fail to teach the anodized aluminum coating having a mechanically finished surface essentially free of loose particles.

8. Kumuda teaches mechanically finishing the surface of a chamber component for the purpose of providing a surface with a good corrosion resistance and less gas adsorption (column 6, rows 12-19).

9. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the coating in Otsuki and Schoepp et al. with a mechanically finished surface in order to provide the surface with good corrosion resistance and less gas adsorption as taught by Kumuda.

10. Examiner recognizes that Kumuda fails to explicitly state that the surface is essentially free of loose particles. However, it is well known in the art that semiconductor manufacturing apparatus must be free of foreign matter in order manufacture useable product.

11. With respect to claims 2-3, Otsuki teach lining (14) various surfaces within a processing apparatus such as a cathode and the chamber walls (see Figure 1) for the purpose of providing high-corrosion resistance and insulating property to exposed surfaces within the chamber (abstract). Limited information was given regarding the cathode liner in the specification or the claims of the present invention. In Otsuki, the showerhead electrode acts as a cathode and it is illustrated as being surrounded by a liner.

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki, Schoepp et al. and Kumuda as applied to claims 1-3 above, and further in view of Japanese Patent No. 2001023908A to Okada et al.

13. Otsuki, Schoepp et al. and Kumuda disclose the invention substantially as claimed and as described above.

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14. However, However, Otsuki, Schoepp et al. and Kumuda fail to teach the component as a chamber door.

15. Okada et al. teach the use of a door/gate valve composed of a aluminum alloy for use in a processing chamber for the purpose of improving corrosion resistance (abstract).

16. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a gate as the anodized aluminum alloy component with the yttrium oxide film in Otsuki, Schoepp et al. and Kumuda provided a component such as a gate valve with increased corrosion resistance as taught by Okada et al.

17. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otsuki, Schoepp et al. and Kumuda as applied to claims 1-3 above, and further in view of U.S. Patent No. 6,521,046 to Tanaka et al.

18. Otsuki, Schoepp et al. and Kumuda disclose the invention substantially as claimed and as described above.

19. However, Otsuki, Schoepp et al. and Kumuda fail to teach the anodized aluminum alloy as high purity aluminum alloy, where high purity describes an aluminum alloy with all impurities other than MG being **less than about 0.1 wt%** each, particularly Si, Fe and Cu.

20. Tanaka et al. teach the use of an anodized aluminum alloy with each of the weight percents of the metals that comprise the alloy being less than **about 0.1%** for the purpose of providing an aluminum alloy excellent in thermal cracking resistance and chemical and/or physical corrosion resistance and capable of reducing contamination excellently and further having excellent and wide applicable brazing property in a high temperature corrosive circumstance (abstract).

21. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an anodized aluminum alloy as defined above in Otsuki, Schoepp et al. and Kumuda in order to provide an aluminum alloy excellent in thermal cracking resistance and chemical and/or physical corrosion resistance and capable of reducing contamination excellently and further having excellent and wide applicable brazing property in a high temperature corrosive circumstance as taught by Tanaka et al.

***Allowable Subject Matter***

22. Claims 13-18 are allowed.

23. The following is an examiner's statement of reasons for allowance: The cited prior art fails to teach or fairly suggest a processing chamber component resistant to a plasma including fluorine and oxygen species, said component comprising a high purity aluminum substrate where particulates formed from mobile impurities have a particle size distribution such that no more than 0.2% of the particles are larger than 20 $\mu$ m, with nor particle being larger than 50 $\mu$ m, nor, does any other piece of prior art provide motivation to combine the cited references with a reference that teaches the use of such a material.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

24. Applicant's arguments and amendments, filed 8/6/03, with respect to Inazawa et al. have been fully considered and are persuasive. Applicant's newly added recitation of a "spray coated yttrium oxide coating" is not disclosed in Inazawa et al. The rejections of claims 1-5 have been withdrawn. However, new combinations of previously cited references and newly cited references have been applied above.

***Conclusion***

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action

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is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 703.305.3142. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703.308.1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.308.0661.

km  
14 October 2003

*Primary Examiner  
AU 1763  
P. Hassan-zadeh*